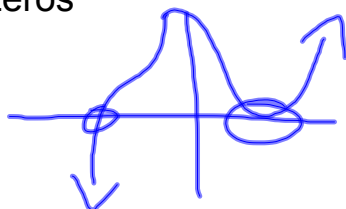


Test tomorrow

7.1 Polynomial Functions

- degree odd/even
- leading coeff. +/-
- end behavior
- # real zeros



7.4 Factor and Remainder Thms

- synthetic substitution
- k problems

7.5 Roots and Zeros

- Fund. thm. of algebra
- complex conjugates
- write equation, given the roots

i $-i$
 $3\pm\sqrt{2}$ $3\pm\sqrt{2}$
 $x^2 - \text{sum } x + \text{product} = 0$
 $(x^2 - 5x + 6)(x^2 - 2)$
 $(x-3)(x-2)(x-1)(x+1)$

7.8 Inverse Functions

- Find the inverse
- Show it is the inverse
- Graph the inverse

7.9 Square Root Functions and Inequalities

- graph (table of values)
- domain and range
- Shade/dash

$[f \circ g](x) = x$
 $[g \circ f](x) = x$

7.2 Graphs

- use calc to find zeros, rel. max, and rel. min

7.3 Quadratic Techniques

- u-substitution
- factoring

Let $u = x^{\frac{1}{3}}$
 $u^2 - 9u + 20 = 0$
 sum/diff
 $a^2 + b^2 = (a+b)(a^2 - ab + b^2)$

7.6 Rational Zero thm.

- p's and q's
- double roots
- constant = 0



$$x^3 + 2x^2 + 3x = 0$$

7.7 Operations on Functions

- + - \times \div
- Composition

$[f \circ g](x)$

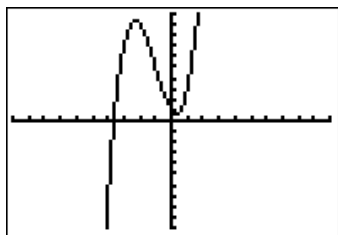
Grab a white board and marker and eraser.

Is the function

a. odd or even _____

b. as $x \rightarrow +\infty$, $f(x) \rightarrow$ _____

c. Number of real zeros. _____



On your calculator, graph

$$f(x) = x^3 + 3x^2 - 2x + 1$$

Then find:

relative max _____

relative min _____

Solve using quadratic techniques:

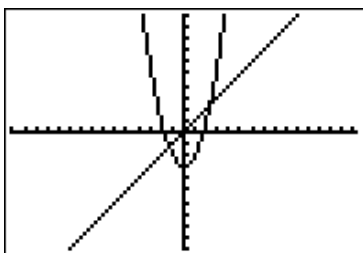
$$x^{\frac{2}{3}} - 9x^{\frac{1}{3}} + 20 = 0$$

List all of the possible rational roots and solve.

$$x^4 - 6x^3 + 13x^2 - 24x + 36 = 0$$

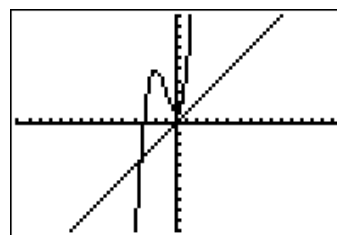
Sketch the inverse:

The equation is
 $y = x^2 - 3$



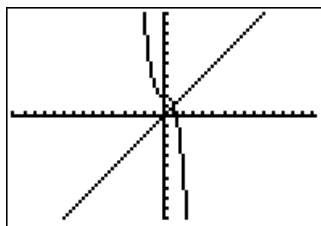
Sketch the inverse:

The equation is
 $y = x^3 + 3x^2 + 1$



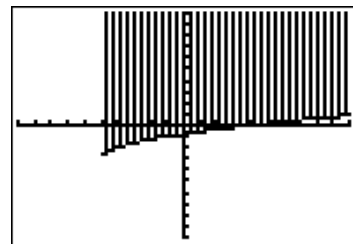
Sketch the inverse:

The equation is
 $y = -x^3 + 2$



Graph (make a table of values)

$$y > \sqrt{x+5} - 3$$



Sketch the graph of a
 polynomial with:

3 real roots, (1 double)
 and a positive leading
 coefficient

Sketch the graph of a
 polynomial with:

3 real roots, (1 double)
 and a negative leading
 coefficient

Sketch the graph of a
 polynomial with:

5 roots, (3 real) and a
 negative leading
 coefficient

Write an equation with
 the following roots: $3, \sqrt{5}$

$$f = \{(1,2) (2,4) (5, 10)\}$$

$$g = \{(2,2) (3,5) (10,6)\}$$

$$[f \circ g] =$$

$$[g \circ f] =$$

Assignment

p405

1-13, 16-23

(4-7 use calc)

(16, 17 find all roots)

Sketch the inverse of #6

Graph $y = (x+2)^2 - 3$
and its inverse